Please replace the paragraph beginning on Page 7, line 3, with the following rewritten paragraph:

a2

- -Printheads are also known with one or two parallel rows of nozzles that are not staggered thus allowing printing of at least certain pixels using drops output by two nozzles in succession (see in this regard Figure 5 which shows a printhead 22 with two rows of non-staggered nozzles 21). - -

Please replace the paragraph beginning on Page 7, line 20, with the following rewritten paragraph:

- -A typical ink jet printer reproduces an image by ejecting small drops of ink from a print head containing an array of spaced apart nozzles, or the ink drops land on a receiver medium (typically paper) to form round ink dots. In some printers, all drops are the same size, and therefore, all dots are the same size. Normally, these drops are deposited with their respective dot centers on a rectilinear grid, a raster, with equal spacing,p, in the horizontal and vertical directions (see Figure 3). Therefore, to achieve full coverage of the ink it is necessary for the dots to have at least diameter p*sqrt(2).- -

a3

Please replace the paragraph beginning on Page 7, line 28 to page 8, line 20 with the following rewritten paragraph:

- -Modern ink jet printers may also possess the ability to vary (over some range) the amount of ink that is deposited at a given location on the page. Ink jet printers with this capability are referred to as "multitone" or gray scale or "multidrop capable" ink jet printers because they can produce multiple density tones at each pixel location on the page. Some multitone ink jet printers achieve this by varying the volume of the ink drop produced by the nozzle by changing the electrical signals sent to the nozzle by varying the diameter of the nozzle. See for example U.S. patent No. 4,746,935. Other multitone ink jet printers produce a variable number of smaller, fixed size droplets that are ejected by the nozzle (or by plural nozzles during different passes of the nozzle array), all of which are intended to merge and land at the same pixel location on the page. See for example U.S. patent No. 5,416612. These techniques allow the printhead to vary the size or optical density of a given ink dot, which produces a range of density levels at each dot location, thereby improving

the image quality. Thus printing methods that require multiple drops sizes usually depend upon the way the drops are generated by the print head. As noted above some printheads have multiple size nozzle diameters, others have circuitry in which the individual ink chambers accept changing electrical signals to instruct each chamber how much ink to eject. Still other printheads have nozzles that ejecting variable number of small, fixed size droplets that are intended to merge then land in a given image pixel location. Printing methods that deposit more than one drop in the pixel location are typically carried out by multiple printing passes wherein the printhead prints a row of pixels multiple times, the image data to the printhead changing in accordance with each pass so that the correct number of total droplets deposited at any pixel location is commensurate with the density required by the processed image data.--

The paragraph beginning on Page 10, line 29, has been amended as follows:

--Referring now to Figure 5A, an ink jet printer system is shown in which a controller, 130, controls a printhead, 140, a print head controller and driver, 150, and a print media controller and driver, 160. The controller 130, which may include one or more microcomputers suitably programmed, provides signals to the printhead controller and driver 160 that directs the print head driver to move the print head in the fast scan direction. While the print head is moving in the fast scan direction, the controller directs the print head to eject ink drops onto the print medium at appropriate pixel locations for the reference raster when pixels on the reference raster are being printed. In a subsequent pass the controller, while the printhead is moving in the fast scan direction, directs the printhead to eject ink drops onto the print medium at appropriate pixel locations of the shifted raster when pixels on the shifted raster are being printed. During a single pass printing is only made on one of the rasters, reference or shifted, but not both. Suitable signals are provided to the print head from the print head controller so as to print the image data at the appropriate pixel locations on the receiver sheet. After a print pass, the controller media controller directs the print media drive 170 to move the print medium in the slow scan direction. Signals output from the print head controller are responsive to data signals input

A4 (cont'd)

thereto from a suitable electronic data source that provides a data file of an image to be printed.--

The paragraph beginning on Page 11, line 20, has been amended as follows:

--Shown in Figure 6 is an arrangement of drops which illustrate one feature of the invention. For the cluster the arrangement is a three by two cluster of large drops (drops 1-6) placed on the reference raster, and a small drop (drop "a") placed on the shifted raster. In a preferred embodiment, the large drops are not large enough to achieve full coverage and a gap remains in the center of the cluster. However, a single small drop is large enough to cover the gap. This arrangement of drops not only achieves full coverage but also does so with a lower volume of ink per unit pixel. The position of the small drop "b" is used to illustrate the position of the shifted raster relative to the reference raster.--

A5

The paragraph beginning on page 12, line 16 have been amended as follows:

Referring again to Fig. 7, the image signal i is converted to a printhead image signal o by the swath extractor processor 182. The processor 182 includes a pass table 183 which is a two dimensional look-up table that contains values of a reference printhead signal as a function of density level and pass number which is kept track of by pass table processor 184. The data values contained in the pass table 183 may be in a variety of different formats such as will be explained below. For example, the electronic circuitry that activates the print head may be designed to accept ink drop volumes in picoliters. Thus, the electronic circuitry 185 that activates the print head would convert the print head image signal o, which would contain desired ink drop volumes, into electrical signals that instruct the print head to produce the desired volumes to form dots of the desired size or optical density. It is important to note that the format of the data values in the pass table 183 is not fundamental to the invention, and the invention may be applied to create a printer image signal o for any particular print head by using the appropriate data values in the pass tables 183.

A6

IN THE CLAIMS

Please amend the claims as follows: